

# Impact of a Health Intervention in Latino Children in Central Ohio

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## **ABSTRACT**

**Background:** According to the National Center for Health Statistics, 15.3% of all American children between the ages of 6 and 11 are overweight and the prevalence of overweight children is disproportionately higher among Mexican-American children (1). The percent of overweight Mexican-American children ages 6 to 11 is 23.7%, significantly higher than the 11.8% for non-Hispanic whites (1). Overweight and obesity lead to an increase risk of many severe health problems and morbidities including diabetes, high blood pressure, and heart disease. *Jump into Food and Fitness* (JIFF), an intervention program targeted for elementary school-aged children, was developed by the 4-H Youth Development team at Michigan State University Extension is designed to educate children ages 8 to 11 about healthy food choices, nutrition, and physical fitness, and is modifiable for younger or older children (2). JIFF was not designed specifically for Latino children, and its implementation to the Latino community is a recent application in community nutrition research.

**Purpose:** The purpose of this research is to measure the success of the intervention with a group of Latino children, as well as to develop and pilot an evaluation tool for this intervention.

**Procedure:** In order to investigate the impact of this intervention in Latino children, the program has been applied to a group of children whose parents attended free nutrition and exercise classes through Centro Esperanza Latina on the West side of Columbus. The

children and their parents were a part of another research project conducted by researchers at The Ohio State University. For seven weeks the primary investigator, with the help of a regular childcare provider, applied JIFF to a group of 12 children for once a week for one hour. The piloted evaluation tool included a pre and post food behavior and physical fitness questionnaire created by the primary investigator. It also included seven individual evaluations to be conducted before and after each lesson in order to measure the impact of each individual lesson. The evaluations included asking questions and conducting activities for the children in order to measure acquired knowledge and skills, as well as behavior change. The classes, handouts, and parent newsletters were translated into Spanish.

**Findings:** The piloted evaluation tools were successful in measuring acquired knowledge and short-term behavior change for this sample population. Variations of the evaluation tool may also be successful in measuring long-term behavior change with future implementations of other curriculum. The evaluation tools indicate that the sample populations did not consistently retain knowledge acquired during each lesson of the JIFF curricula and pre and post behavior change was inconsistent for this sample.

**Conclusions:** Education through school, after school programs, or other types of intervention could benefit the health of many overweight children; however, evaluation of these programs is critical. The evaluation tool could potentially be used for assessment of the impact of JIFF on other populations and variations of the piloted

evaluation tool could also be used to measure the success of a different health intervention targeting children.

## **INTRODUCTION**

Education through school, after school programs, or other types of intervention could potentially benefit the health of thousands of children throughout the country who are overweight or obese. *Jump into Food and Fitness* (JIFF) has been created as an intervention program targeted for elementary school-aged children. The *Jump into Food and Fitness program* is an educational curriculum, which was created in 2003 by Cynthia B. Mark, Ph.D., project director and the 4-H Youth Development team at Michigan State University Extension (2). The JIFF curriculum is designed to educate children ages 8 to 11 about healthy food and fitness choices (2).

The program can be modified for younger or older children as well. JIFF was not designed specifically for Latino children, and its implementation to the Latino community is a recent application in community nutrition research. In a previous study done by researchers at the Ohio State University, JIFF was translated into Spanish and adapted for Latino children in Columbus, Ohio. Effective evaluation tools are also necessary in order to recommend a health intervention for a specific population. As well as implementing the program to this population, the researcher has also created evaluation tools for the curricula.

## **REVIEW OF THE LITERATURE**

### **Background on the Latino community in the U.S.**

According to the 2000 census report, 12.5% of the total U.S. population is of Hispanic ethnicity, and 7.4% of the total population is of Mexican decent (3). Latinos are the fastest growing ethnic group and the largest minority group in the United States (3). The Latino population continues to grow and has increased 162% in the United States in the last ten years (3).

Latino children make up 15% of the total U.S. population according to the 2000 census (3). The median age of the Mexican population in the U.S. is nine years younger than that of the rest of the population (4). The census showed the median age of Mexican Americans was 26.0 years of age, while the median age for the rest of the population was 35.4 years in 2000 (3).

Demographically, Latinos are spread out all over the United States; however they are mainly concentrated in metropolitan areas. The Latino community of Ohio has grown significantly as well. The number of children born of Latino heritage increased 490% in Franklin County from 1995 to 2002 from 195 births to 957 births (5).

As the Latino community grows within Ohio and the U.S., concerns for the health of this minority group increase as well. A recent study conducted by researchers at the National Center for Health Statistics concluded that based on a body mass index greater than 25, 15.3% of all American children between the ages of 6 and 11 are overweight (1). The study also concluded that the prevalence of overweight children is especially high among Mexican-American children (1). The percent of overweight Mexican-American

children ages 6 to 11 is 23.7%, significantly higher than the 11.8% for non-Hispanic whites (1).

### **SIGNIFICANCE**

Overweight and obesity lead to an increase risk of many severe health problems including diabetes, high blood pressure, and heart disease (6). According to the Centers for Disease Control, 10.6% of all Mexican Americans have diabetes, however many cases go undiagnosed because of poor access to healthcare, fear of diagnosis, and lack of education (7). Diabetes is an increasing epidemic in Latino children and their parents. It is estimated that 8.2% of all Hispanic Americans over the age of 20 have diabetes, and research shows that Mexican Americans are twice as likely to develop the disease as non-Hispanic whites (7). These astounding statistics caused by the overweight epidemic are directly related to poor nutrition habits and lack of physical activity (1). Research conducted by the Centers for Disease Control found that 61.5% of all children 9-13 do not participate in any organized extracurricular physical activity (8).

### **STATEMENT OF PURPOSE**

The purpose of the proposed project is to measure the impact of the *Jump into Foods and Fitness* (JIFF) curriculum when adapted and applied to Latino children in central Ohio, and to develop and pilot evaluation tools that will effectively measure its success. Application of the JIFF program will allow measurement of cultural relevance, acceptability, and adaptability of the intervention when applied to the Latino community.

## **OBJECTIVES**

1. To determine if the Jump into Food and Fitness program is able to both competently meet the cultural needs and positively impact the health education and lifestyles of Latino children in central Ohio.
2. Create and pilot evaluation tools for the curricula that can be modifiable for other health interventions.

## **METHODS**

### **Implementation of the Curriculum**

The JIFF program consists of seven lesson plans that can be applied on a weekly basis for approximately one-hour blocks of time. The researcher has implemented the program for a one hour time block during an after school program in correspondence with Centro Esperanza Latina in a predominantly Latino area on the west side of Columbus. JIFF includes activities, snacks, and games designed to teach children about healthy eating and physical activity.

The JIFF program, translated and adapted for a Spanish speaking population, was applied for a seven-week period. Creative evaluation tools have been designed by the principal investigator and were applied each week to test whether the children learned the material covered in each lesson. There was also a food behavior and physical activity checklist that was conducted before and after the program in order to measure its impact. The evaluation tools and checklists were conducted in Spanish.



## **Parental Involvement**

The goals of implementing the JIFF program in this project are to not only educate the children of the Latino community, but also to impact their parents. Material was sent home to them through the children in the form of handouts or given directly to them at the intervention program. Parents were encouraged to become active in their involvement with the children's learning, and details of the program were available to them for further explanation, such as different games and activities that can be done at home in order to mentor the children and encourage healthy lifestyles.

## **Adaptations of the Program**

In order to clearly measure the effectiveness of the JIFF program in the Latino community it was important that the material in the program be clearly communicated to the children and their parents, without changing the curriculum itself. Many of the children in the after school program learned the material and followed the lesson plans taught in Spanish, while some children preferred to speak English.

Most of the parents were not fluent in English, and the principle investigator of the research project, and other volunteers often communicated with the parents in Spanish. Consent forms, questionnaires, take home handouts, and evaluation tools were translated and conducted in Spanish in order to clearly communicate to the target audience, the Latino children and their parents. It was important to ensure clear communication and implementation of the program, without changing its content. Communication in Spanish is likely to have minimized errors in the data collection of the

project, and allowed for a more clear measure of the impact that JIFF had on this sample population.

Language was not the only adaptation to be made for the Latino children. Consideration of cultural food preferences, such as snack preparations, was also taken into consideration. In order to encourage attendance, the program was offered free of charge and was conducted while the children's parents are taking a dance class as coordinated by the Centro Esperanza Latina.

### **Budget**

The estimated budget for the entire group for each lesson was twenty dollars per week including the price of traveling and teaching. Each week the estimated itemized expenses were \$3.00 for gas, \$12.00 for snacks, paper plates, cups, bottled water, and napkins, and \$5.00 for teaching aides such as dry erase boards, index cards, and photocopies of the newsletters and worksheets. An estimated total budget for the seven weeks is \$140.

### **Evaluation Tools and Data Analysis**

Several evaluation tools created by the principle investigator were used at the beginning and the end of each lesson to measure the success of each lesson individually. Evaluating each lesson allowed the researcher to determine if the children learned what they were being taught. It benefited data collection because weekly attendance varied and many children only attended a few of the lessons. There were also evaluation tools used at the beginning and the end of the program to measure the impact of the intervention

overall. The evaluation of the program included questionnaires, activities, and behavioral observations. Each tool was a pilot for a new type of evaluation for this program. The tools were created so that questions could be explained and tailored for the needs of the individual, regardless of reading ability.

### **Evaluation Tools**

*See appendix*

### **Qualitative Data Collection**

**Methodological Observations:** Observations from each class were recorded and used as qualitative data for analyzing impact of the program.

**Description of Limitations:** According to the observations made throughout the study, limitations were listed and considered when analyzing the impact of the curriculum.

**Evaluation of the Evaluation Tool:** Facility, effectiveness, and reliability were evaluated for each evaluation tool according to observations made at each lesson, and recommendations for the evaluation tools were made after data collection in order to improve effectiveness for future use.

**Internal Review Board:** The primary investigator's research was listed under a broader research project being conducted by the first and second advisors of the investigation.

## Results

### Results of Piloted Evaluations

#### Evaluation Tool 1

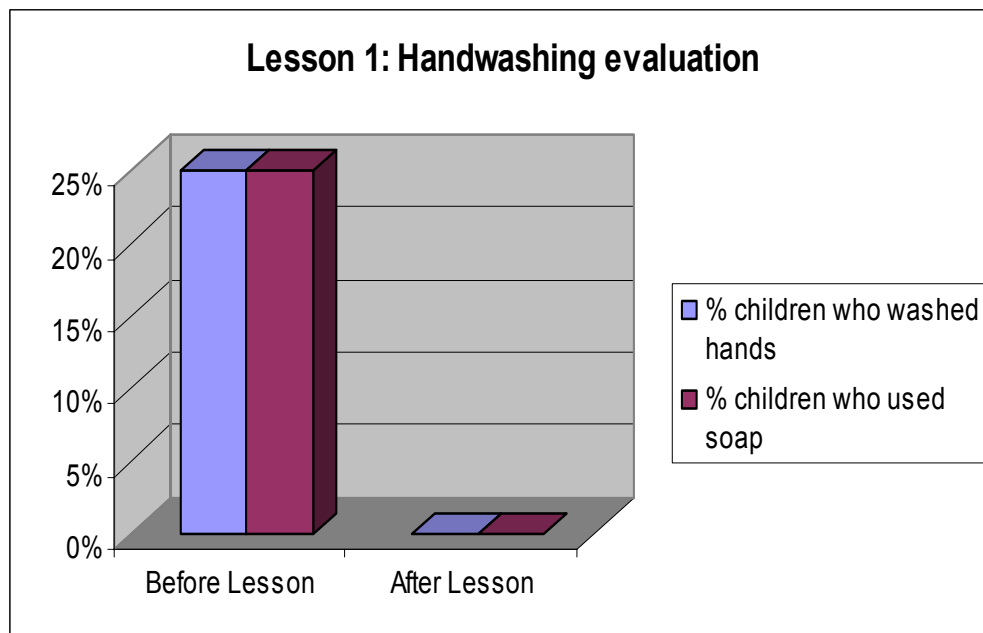
#### Lesson 1

**Learning the importance of Hand washing.**

**Question for the children: Who would like to wash his or her hands?**

**Pregunta para los niños: ¿Quién quiere lavarse las manos?**

	Before Lesson	After Lesson
<b>Average Time spent Washing hands (seconds)</b>	10 seconds	0
<b>Percent children Who washed hands</b>	25% (2/8)	0%
<b>Percent children who washed with Soap</b>	25%	0%



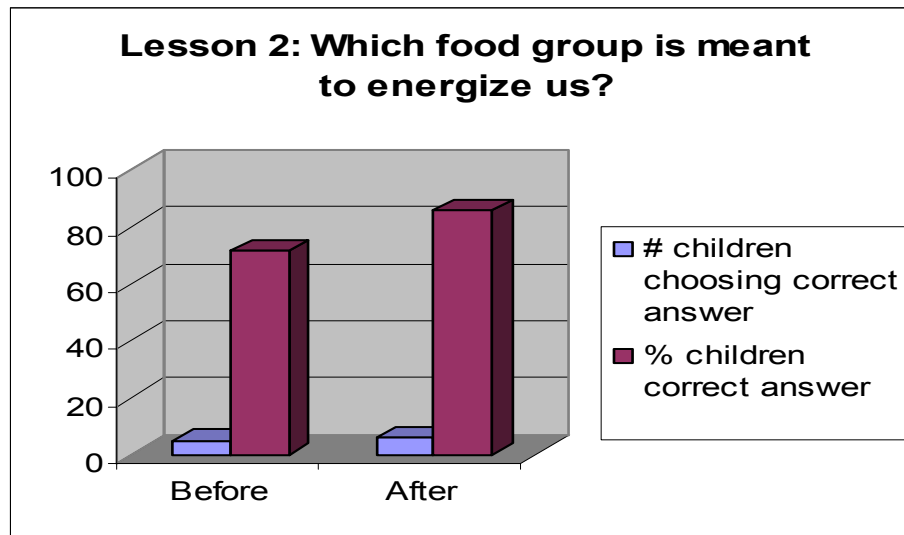
**Evaluation Tool 2**  
**Lesson 2**

**Identification and importance of the Grain group**

**Question for the children: Which food is a part of the food group meant to energize us?**

**Pregunta para los niños: ¿Cuál de estos alimentos pertenece al grupo que nos da energía?**

	Before the lesson	After the lesson
Number of children choosing bread	5	6
Percentage of children choosing bread	71.4%	85.7%



**Evaluation Tool 3**  
**Lesson 3**

**The importance of Fruit and Vegetables.**

**Question for the children: Which food should you wash before eating?**

**Pregunta para los niños: ¿Cuál de estos alimentos debes de lavar antes de comer?**

**Before the lesson**

**After the lesson**

<b># children choosing grapes</b>	3	3
<b>% children choosing grapes</b>	75%	75%



#### **Evaluation Tool 4**

#### **Lesson 4**

**The importance of the meat and dairy group.**

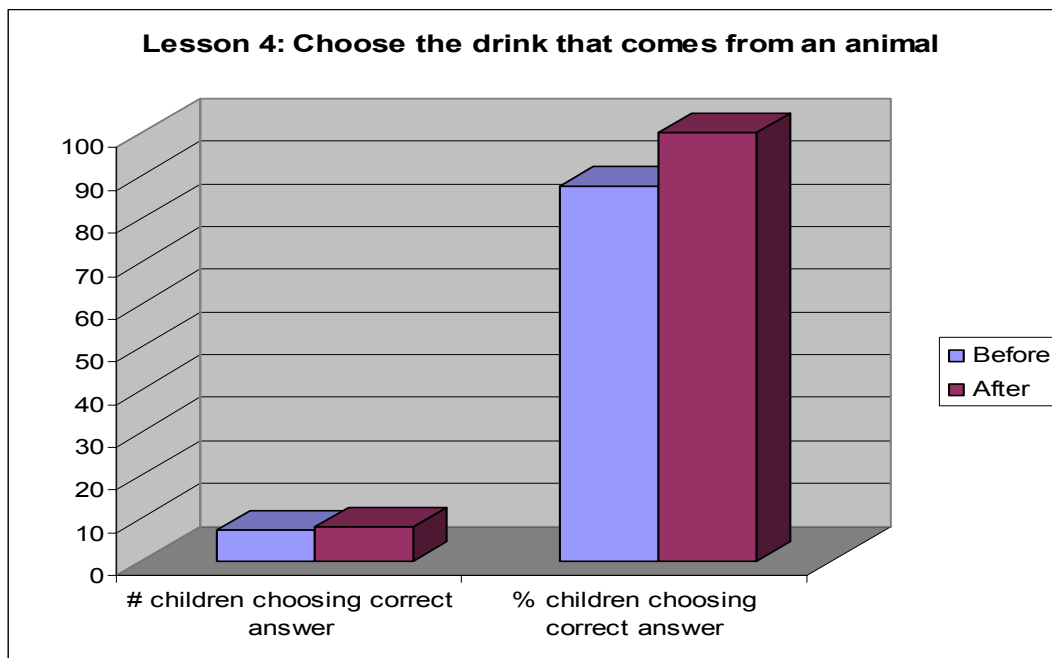
**Question for the children: Chose the drink that you think comes from an animal.**

**Pregunta para los niños: Escoge la bebida que pienses que viene de un animal.**

**Before the Lesson**

**After the Lesson**

<b># Children choosing milk</b>	7	8
<b>%Children choosing milk</b>	<b>87.5%</b>	<b>100%</b>



## Evaluation tool 5

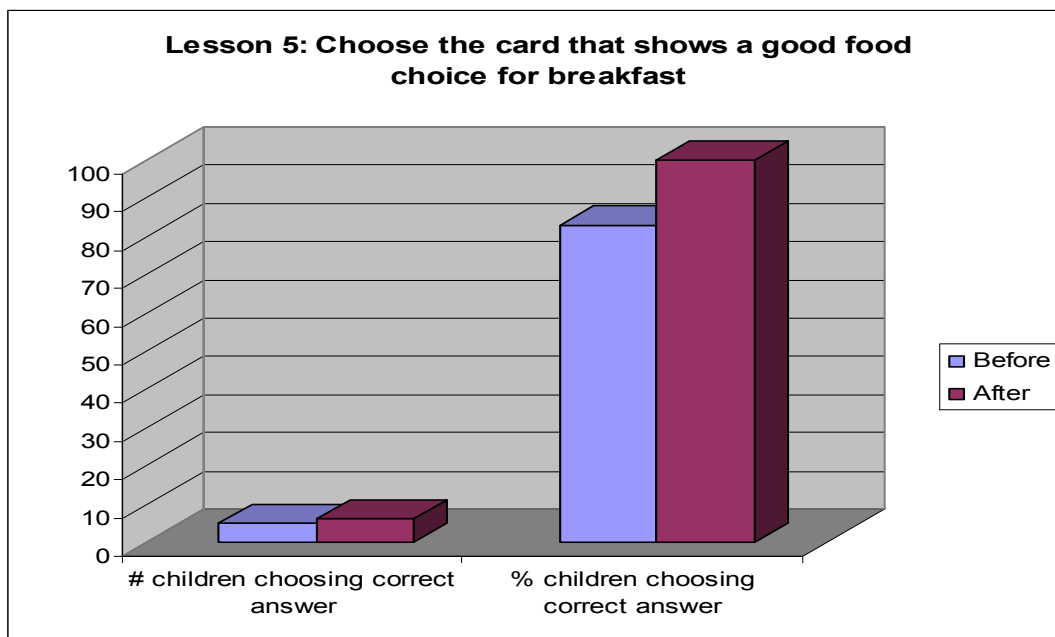
### Lesson 5

#### The Importance of eating breakfast:

**Question for the children: Choose the card that shows a good food choice for breakfast.**

**Pregunta para los niños: Escoge la tarjeta que muestra cual sería la mejor selección para el desayuno.**

	Before Lesson	After Lesson
# Correct answers	5	6
% Correct answers	83%	100%



### Evaluation Tool 6

#### Lesson 6

**The Importance of choosing healthy snacks.**

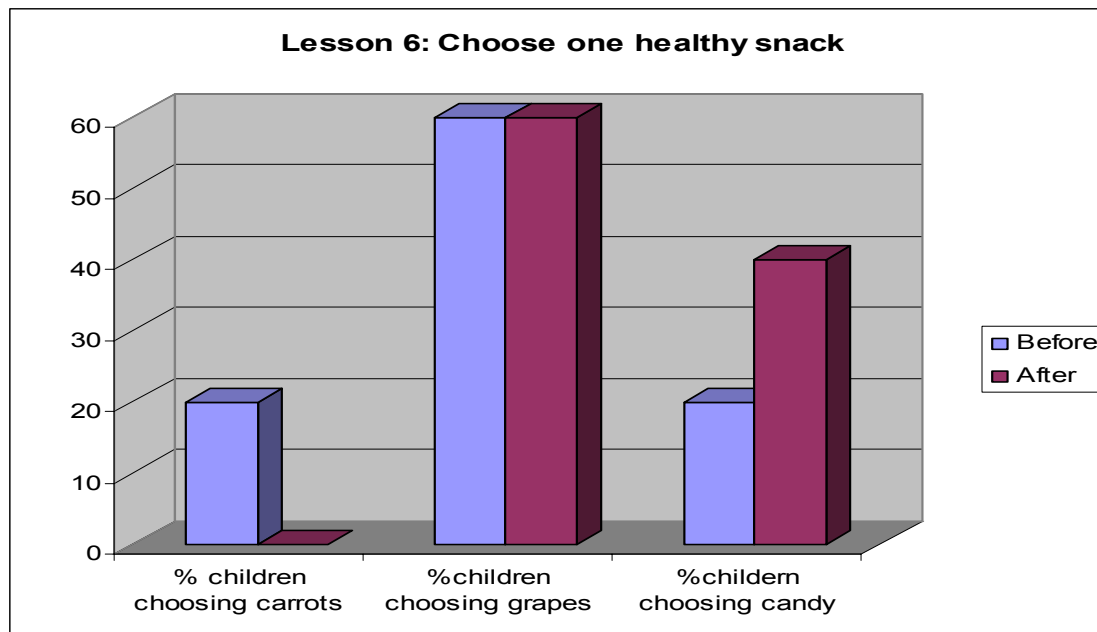
**Ask the children: Choose one healthy snack**

**Decirles a los niños: Escoge una comida saludable**

	Before	After		Before	After
# Children choosing Carrots	1	0	% Children choosing Carrots	20%	0%



# Children choosing Grapes	3	3	% Children choosing Grapes	60%	60%
# Children choosing Candy	1	2	% children choosing candy	20%	40%



## Evaluation Tool 7

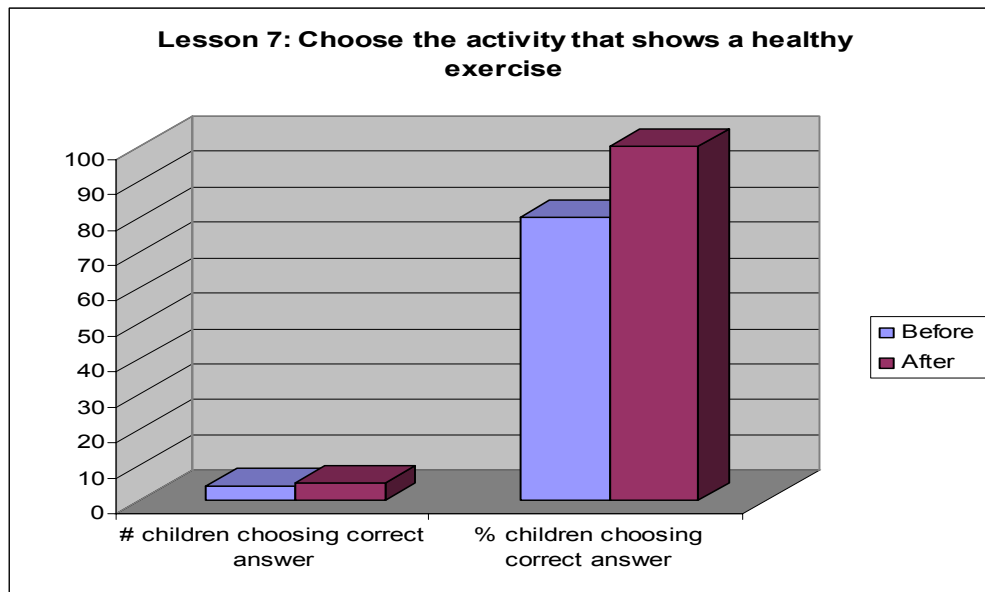
### Lesson 7

The importance of physical activity, strength and flexibility.

**Question for the children: Choose the activity that is the healthiest way to exercise.**

**Pregunta para los niños: Escoge la actividad que sea el ejercicio más saludable.**

	Before Lesson	After Lesson
Number of Correct answers	4	5
Percent Correct answers	80%	100%



**Food consumption and physical activity checklist Results for pre and post curriculum tests**

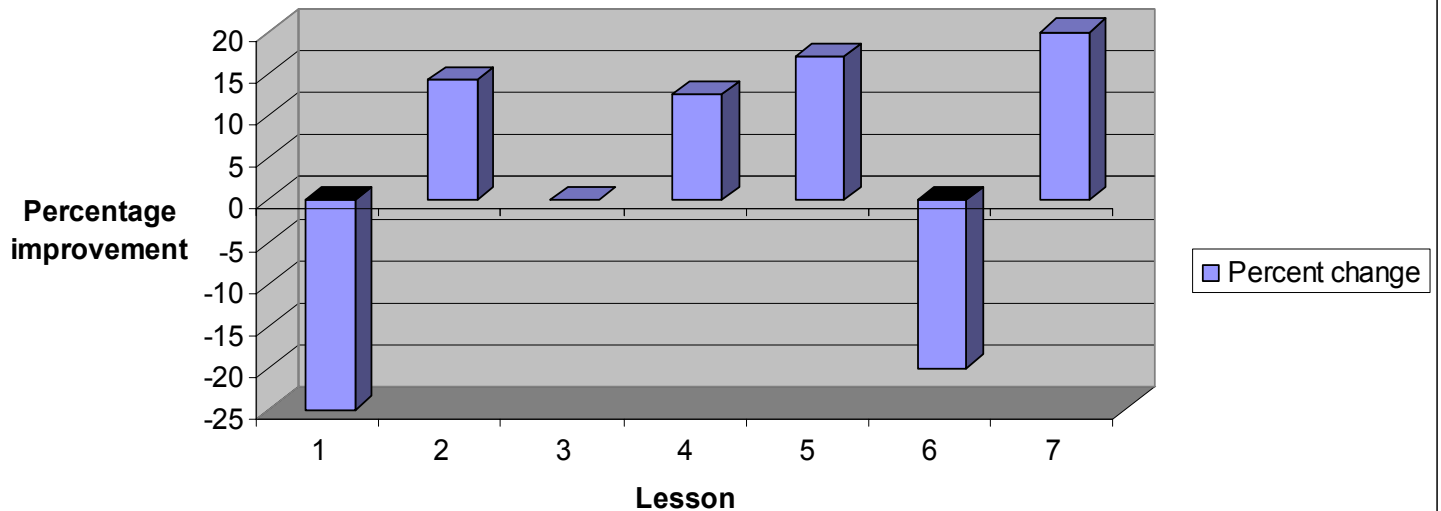
	Never	Sometimes	Always
<b>I wash my hands before eating and after going to the bathroom.</b>	Before 2 After 0	Before 4 After 1	Before 1 After 4
<b>How many kinds of fruits do you eat a day?</b>	None Before 2 After 0	One Before 4 After 5	Two or more Before 1 After 0
<b>How many kinds of vegetables do you eat a day?</b>	None Before 1 After 1	One Before 0 After 3	Two or more Before 6 After 1
<b>How much TV do you watch a day?</b>	Less than an hour  Before 0 After 3	1-2 hours  Before 5 After 1	More than 2 hours  Before 2 After 1
<b>How many times a week do you exercise or play a sport?</b>	None Before 0 After 2	1-2 Before 4 After 1	3 or more Before 3 After 2
<b>I drink milk everyday</b>	Never Before 0 After 0	Sometimes Before 1 After 1	Always Before 6 After 4
<b>How many glasses of water do you drink a day?</b>	0-2 Before 2 After 1	3-5 Before 4 After 2	6 or more Before 1 After 2

<b>I play outside or go for walks</b>	<b>Never</b> Before 1 After 0	<b>Sometimes</b> Before 3 After 0	<b>Always</b> Before 3 After 5
<b>I eat breakfast</b>	<b>Never</b> Before 1 After 1	<b>Sometimes</b> Before 0 After 1	<b>Always</b> Before 6 After 3
<b>How many times a day do you drink soda?</b>	<b>Never</b> Before 1 After 2	<b>1-2</b> Before 4 After 1	<b>2-4</b> Before 2 After 2

### **Data Analysis:**

Statistical analysis for this population was not conducted due to the small sample population and the varied attendance at each lesson. However, the JIFF lessons that showed successful improvement in knowledge or behavior in the children from the beginning to the end of the lesson were lesson 2, lesson 4, lesson 5, and lesson 7. The evaluation tool showed no improvement from lesson 3 and behavior change was actually measured to be negative at the end of lessons 1 and 6. Lessons 1 and 6 were the only parts of the evaluation tools that simply observed behavior of the children, where as the children's knowledge was evaluated in the other lessons. This indicates that the JIFF program may be successful for increasing the children's acquisition of knowledge, but not for encouraging behavior change.

### Percent improvement for each pre and post lesson evaluation



This figure shows the percent improvement observed after the pre and post evaluation tools were implemented at each lesson. The results show a positive improvement with lessons 2,4,5, and 7, no change with lesson 3, and negative change with lessons 1 and 6.

The pre and post curricula evaluation conducted on the children had varied results. Five of the ten questions asked at the beginning and the end of the program showed positive improvement, three of the ten questions showed no improvement, and two of the ten questions showed negative improvement.

### Analysis of pre and post program evaluation

Hand washing frequency	# Before	% Before	# After	% After	Improvement after lesson?
Never	2	29%	0	0%	TRUE
Sometimes	4	57%	1	20%	
Always	1	14%	4	80%	
Fruit variety and frequency	# Before	% Before	# After	%After	Improvement after lesson?
None	2	29%	0	0%	TRUE
One	4	57%	5	100%	
2 or more	1	14%	0	0%	

<b>Vegetable variety and frequency</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>%After</b>	<b>Improvement after lesson?</b>
None	1	14%	1	20%	FALSE
One	0	0%	3	60%	No change
2 or more	6	86%	1	20%	
<b>Hours of daily TV</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>%After</b>	<b>Improvement after lesson?</b>
< 1 hour	0	0%	3	60%	TRUE
1-2 hours	5	71%	1	20%	
>2 hours	2	29%	1	20%	
<b>Frequency of physical activity and sports</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>% After</b>	<b>Improvement after lesson?</b>
None	0	0%	2	40%	FALSE
1-2 times/wk	4	57%	1	20%	Negative
>2 times/wk	3	43%	2	40%	
<b>Daily Milk drinking</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>% After</b>	<b>Improvement after lesson?</b>
Never	0	0%	0	0%	FALSE
Sometimes	1	14%	1	20%	No change
Always	6	86%	4	80%	
<b>Glasses of Water per day</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>% After</b>	<b>Improvement after lesson?</b>
0 to 2	2	29%	1	20%	TRUE
3 to 5	4	57%	2	40%	
6 or more	1	14%	2	40%	
<b>Frequency of playing outside or walking</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>% After</b>	<b>Improvement after lesson?</b>
Never	1	14%	0	0%	TRUE
Sometimes	3	43%	0	0%	
Always	3	43%	5	100%	
<b>Eating Breakfast</b>	<b># Before</b>	<b>% Before</b>	<b># After</b>	<b>% After</b>	<b>Improvement after lesson?</b>
Never	1	14%	1	20%	FALSE
Sometimes	0	0%	1	20%	No change
Always	6	86%	3	60%	

daily intake of soda	# Before	% Before	# After	% After	Improvement after lesson?
Never	1	14%	2	40%	FALSE
1 to 2	4	57%	1	20%	Negative
3 or more	2	29%	2	40%	

## Results of pre-post program Questionnaire: Summary

Behavior	Improvement
Hand washing	Positive
Fruit consumption	Positive
Vegetable consumption	None
Hours of television watching	Positive
Frequency of physical activity	Negative
Milk Consumption	None
Water consumption	Positive
Frequency of playing or walking outside	Positive
Eating breakfast	None
Daily soda consumption	Negative

## Discussions

According to the results of the piloted evaluation tools used at each lesson, the JIFF program may be successful for teaching children the about different food groups, what the purpose of different foods are, the importance of eating a healthy breakfast, and the importance of physical activity. The curricula, may not; however, be successful at bringing about behavior change and encouraging hand washing, washing fruits and vegetables before consumption, or choosing healthy snacks.

The pre and post physical activity and food consumption checklist was inconsistent when compared to the evaluation tool used at each lesson. According to the pre and post program evaluation, the JIFF curricula was successful at improving the frequency of hand washing, consuming a variety of fruits, watching fewer hours of television, drinking more glasses of water per day, and playing outside more frequently. This checklist; however, suggests that the JIFF program may not be successful for improving the vegetables consumption, milk consumption, physical activity, eating breakfast, or decreasing the daily intake of soda.

**Possible explanations of results:** There are many factors that are of concern when conducting nutrition research in the community. The children may have, for example, decreased the amount of physical activity that they did per week because of changes in weather. Because the program was implemented from October to November, this would be a consistent explanation.

The program was also conducted during the evening hours when the children may have been fatigued and unable to fully participate. Group dynamics may have also influenced the subjects when the evaluation tools were conducted.

The implementation of the program may not have been consistently successful at each lesson and this was the first time that the primary investigator implemented the JIFF program.

**Challenges during implementation:** Often there were not enough resources available to teach the children as effectively. For example, one lesson asks to play a game with streamers, but these streamers were not available to the students, so modifications were made. One of the biggest challenges that arose during the implementation of the program

was the varied age difference between the children at each lesson. Often the children under five years old were not able to fill out the forms and participate in all of the activities that the older children were able to. The children older than eight; however, were bored with the games, lessons, and physical activities. Many of the children in the program were unable to read and write, which posed a challenge when they were asked to fill out the handouts used at each lesson. They were often very eager to participate, but were later discouraged when they could not be fully engaged. Attendance was also a challenge during the research. Some children came for only a few of the lessons taught, while other children attended only the last two sessions.

### **Suggestions for improving the evaluation tools**

- Evaluate a larger sample size.
- Have someone who is not teaching the lesson conduct the evaluations.
- Evaluate each child individually separate from the other children.
- Include more behavior and skill oriented evaluations rather than evaluations of knowledge.
- Use fewer questions on the behavior checklist so that the children can better focus.
- Use questions that do not entail numerical responses in the behavior checklist evaluation.

### **Overall experience of JIFF**

The JIFF program, although very adaptable and creative, is very dense with information. There is no clear message written for each lesson, and the important



educational messages are not repeated and emphasized enough during the program. Implementation of the program posed many challenges. Some challenges relate to the overall program design, while others were specific to the sample population. One of the greatest challenges was implementing the program to a group of children of different age groups. The children younger than five were often distracted, and unable to stay focused during the nutrition portion of the lesson, while the children older than nine were bored and harder to motivate. The best age range suitable for the JIFF program is between 6 and 8 years of age, however children respond differently to different styles of learning. Children who were not literate were discouraged and unable to fully participate in the program because of the various worksheets used in each lesson.

Other challenges were posed during the physical activity portions of the lesson. Often the children could not stay still for long enough to stretch or cool down before and after the activities. The children responded poorly to the more complicated directions and the more complex activities. Often the children preferred to simplify the activities. The curricula also requires a lot of space to play and materials to use that may not be available in some teaching environments.

The JIFF program may be more effective if it involved the parents and schoolteachers more intensely. The flyers sent home with the kids are simply not enough to engage the parents in the nutrition and fitness lessons. For these subjects, the flyers were translated into Spanish and sent home with the children, or given directly to the parents when they arrived to pick up their children. The parents' understanding of the material or use of the material was not measured in this experiment; however, successful behavior change of children must involve the parents or other primary caregiver.

## **Cultural barriers**

There are some cultural barriers that may have effected the communication and implementation of the JIFF program. It must be taken into consideration that the program was not taught by a person of Latino heritage, and the program itself was not designed specifically for the Latino community. Many of the snacks and materials, although modifiable, may cause cultural barriers.

### **Experiences of each lesson of JIFF**

**Lesson 1: Pyramids for Health:** The children responded well to the food guide pyramid and the food groups introduced. The children focused on the nutrition material best when questions about the food groups were posed to them. The children responded well to the *frozen fruitcicles* game, and enjoyed taking turns leading the game. Implementation of the *pretend* game was not as successful. The older children were hesitant to act out motions from the activity pyramid, and the younger children were harder to focus their attention to the pyramid. Before serving a snack, a hand washing demonstration was given. Most of the children felt confident in their ability to wash their hands and many did not understand the importance of hand-washing until “slam dunk your germs” was explained. In general this lesson is too dense. There are too many activities to implement. The first lesson does not allow time for getting to know the teacher, volunteers and peers. Especially if this is the first time that a volunteer or teacher will be working with these children, it is important to not overwhelm the children with too much new information at the first lesson of the program.

**Lesson 2: Go the Distance with Grains:** Each lesson begins with a review of the material from last week, which is important in order to transition into new material. The children extremely enjoyed using the jump ropes, and other materials, however the materials often distracted them from the game or activity. Because I had a slightly different group of children at each lesson, the children did not form many bonds as the program continued. This is one of the reasons that partner activities, like ‘back to back’ were harder to implement. Not all of the children had a partner with whom he or she felt comfortable with. The children enjoyed filling in part of the ‘kangaroo food ‘n’ Fit activity log,’ but some had trouble reading and writing. Often there was not enough time to help each individual student with the writing activities. This lesson however, was less dense and easier to implement.

**Lesson 3: High Five for Health:** The materials for ‘streamers galore’ were not available and the activity is not possible to implement without the materials. The children liked the ‘fitness scavenger hunt,’ however it was a bit complicated for them. It was also hard to implement because there was a lot going on at once. This activity may have been particularly difficult for this group of children because it was a smaller group of seven children. Activities dividing the group into smaller groups are more plausible for larger groups of children. The kids were very energized and excited after the ‘fitness scavenger hunt’ that it was very hard to get them to calm down for the cool down and then for the nutrition lesson.

**Lesson 4; Mooving and Motion:** The names of the muscle groups were too difficult for the children to learn in one session, however the children did enjoy ‘muscle mania.’ The children were difficult to focus for the ‘slow motion locomotor movements’ game. Some children refused to participate in the cool down, while other children did not want to slow down. The nutrition discussion involving foods from animals and foods from plants was very successful. The children greatly enjoyed creating a list of food items in each category.

**Lesson 5: Power Up the Day:** The children enjoyed ‘fitness speedway,’ however, the game was difficult to execute because our session was held in a smaller classroom and we did not have access to a larger gymnasium area. It was also difficult to organize the kids into different teams who would participate in different activities at different times. Often times a group wanted to mimic another group, rather than do the exercise at their own station. ‘Circle keep away’ was a good experience for some children, and not for others. One child was often left in the middle, while other children remained in the circle. We were unable to walk outside for this session due to the environment in which it took place and the restrictions of the after school program. The children enjoyed learning about breakfast and filling out the ‘fast breaks to breakfast’ handout; however, many of the children who could not read felt discouraged by the hand out and needed more attention than I was able to give.

**Lesson 6: On the Go:** ‘Bumper cars’ was a fun game for the kids, but it was also not very easy to play in a small space either. The children really enjoyed creating activity

snacks and sharing them with the group. In order to demonstrate safety hints for packing a snack, I had the children wash an apple that they were to eat for a snack. The kids enjoyed washing the fruit and also discussing what foods were okay to keep at room temperature when packing lunch.

**Lesson 7: Choices for Good Health:** Although the ‘cone crazy’ game was fun for the children, they did not pay attention to the theme of the game. I explained the concept of germs to the children before the game and I related it to the importance of hand washing. It was hard to incorporate this theme into a physical activity. The children also enjoyed designing their own game and sharing it with the rest of the class. In some instances; however, some children’s ideas were not included in the game design and it upset a few of the children. Reading labels was too difficult for the group of children that I worked with. The children could often not read and they did not understand many of the concepts on the food label.

### **Conclusion:**

The evaluation tools indicate that the Jump into Foods and Fitness Program, may have a positive impact on the acquisition of knowledge for Latino children, but the curricula does not seem to impact behavior. However; pre and post evaluation analysis was not statistically significant due to the small sample size evaluated. The JIFF curriculum is difficult to adapt for children of varied ages and for children who are not literate.

The piloted evaluation tools were successful in measuring acquired knowledge and short-term behavior change for this sample population. Variations of the evaluation tool may also be successful in measuring long-term behavior change with future implementations of other curriculum.

### **Implications:**

Education through school, after school programs, or other types of intervention could benefit the health of many overweight children; however, evaluation of these programs is critical. The evaluation tool could potentially be used for assessment of the impact of JIFF on other populations and variations of the piloted evaluation tool could also be used to measure the success of a different health intervention targeting children.

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## Appendix:

### **Evaluation Tool 1**

#### **Lesson 1**

**Learning the importance of Hand washing.** Before eating the first snack of the lesson, the children will be asked to wash their hands. They will be observed and timed. The average seconds spent washing hands, and the percent of children to wash their hands will be recorded before and after lesson one.

**Question for the children: Who would like to wash his or her hands?**

**Pregunta para los niños: ¿Quién quiere lavarse las manos?**

	Before Lesson	After Lesson
<b>Average Time spent Washing hands (seconds)</b>		
<b>Percent children Who washed hands</b>		
<b>Percent children Who washed with Soap</b>		

### **Evaluation Tool 2**

#### **Lesson 2**

**Identification and importance of the Grain group:** In this lesson the children will learn how to recognize foods that belong to the grain group. They will learn about rice, cereal, bread, and pastas and how many servings are recommended per a day. They will also learn that grains are foods that give us energy. The evaluation tool for this lesson will consist of three different food groups arranged on a plate. Each child will be asked individually to choose one piece of the food that they believe belongs to the food group that gives us the most energy. On the plate will be an item representing the grain family, and two other items not from the grain category. At the end of the lesson they will be asked again to choose the food they believe to be a part of the food group that gives us energy.



**Question for the children: Which food is a part of the food group meant to energize us?**

**Pregunta para los niños: ¿Cuál de estos alimentos pertenece al grupo que nos da energía?**

	Before the lesson	After the lesson
<b>Number of children choosing bread</b>		
<b>Percentage of children choosing bread</b>		

### **Evaluation Tool 3**

#### **Lesson 3**

**The importance of Fruit and Vegetables:** In this lesson children will learn how to recognize fruits and vegetables, and the importance of fruits and vegetables in the diet. They will also learn how to wash fruits and vegetables, and learn their place on the food guide pyramid. For this lesson, children will be asked to select the food item that should be washed before eating. There will be ham, cheese, and grapes. This time they will not eat the food, it will be displayed as pictures. The question will be asked before and after the lesson.

**Question for the children: Which food should you wash before eating?**

**Pregunta para los niños: ¿Cuál de estos alimentos debes de lavar antes de comer?**

	Before the lesson	After the lesson
<b># children choosing grapes</b>		
<b>% children choosing grapes</b>		

#### Evaluation Tool 4

##### Lesson 4

**The importance of the meat and dairy group:** In this lesson the children will learn what foods belong in the meat and dairy group. They will learn how to recognize this group, and the importance of eating foods that will build strong muscles and bones. For this lesson, the children will be asked to choose drink that they think would be good for building strong bones. They will choose between juice, soda, and milk. They will be given the choice again at the end of the lesson.

**Question for the children: Chose the drink that you think comes from an animal.**

**Pregunta para los niños: Escoge la bebida que pienses que viene de un animal.**

	Before the Lesson	After the Lesson
# Children choosing milk		
%Children choosing milk		

#### Evaluation tool 5

##### Lesson 5

**The Importance of eating breakfast:** In this lesson children will learn that making healthy breakfast choices is important. For this evaluation, three colorful cards each containing a choice of a breakfast food will be placed in front of them. They will be asked to choose a food that is a good choice for breakfast. One card will read “nothing,” another card will read “fruit with milk and cereal,” and another card will read “tortillas.” They will be asked the same question, with different examples at the end of the lesson as well.

Question for the children: Choose the card that shows a good food choice for breakfast.

Pregunta para los niños: Escoge la tarjeta que muestra cual sería la mejor selección para el desayuno.

	Before Lesson	After Lesson
# Correct answers		
% Correct answers		

### Evaluation Tool 6 Lesson 6

**The Importance of choosing healthy snacks:** The children will be offered a snack consisting of healthy fruits and vegetables, and unhealthy treats at the beginning and the end of the class. They will be allowed to take only one small snack at the beginning, and then offered the same choices at the end of the lesson. The number of apples, carrots, grapes, and pieces of candy offered will be consistent at the beginning and end. There will be enough food for each child to have the choice of one of any of these items. The snacks will begin with 15 of each item.

**Ask the children: Choose one healthy snack**

**Decirles a los niños: Escoge una comida saludable**

	Before Lesson	After Lesson
# Carrots remaining		
# Grapes remaining		
Pieces of candy Remaining		

## Evaluation Tool 7

### Lesson 7

**Importance of Physical Activity, strength and flexibility:** Before the lesson, after the first snack is offered, colorful cards will be placed in front of the children. There will be three cards in front of the children each with a different activity written in Spanish. The teacher will ask the children to pick the activity that is the best way to perform exercise while gaining strength and flexibility. The correct card will read, “warm up, stretch, then play soccer,” another card will read “stretching while watching TV,” and the last card will say “picking up your toys” The children will then be asked to place which card they think is correct into a bag. The answer will not be told to the children, and the activity will be repeated with the same questions at the end of the lesson. If the Children are unable to read the cards, the teacher will remind them which color card is for which answer.

**Question for the children: Choose the activity that is the healthiest way to exercise.**

**Pregunta para los niños: Escoge la actividad que sea el ejercicio más saludable.**

	Before Lesson	After Lesson
Number of Correct answers		
Percent Correct answers		

### Food consumption and physical activity checklist

This checklist is a short series of questions designed to ask the children before the JIFF program begins and after the JIFF program ends. The questions will be asked in a creative way in order to stimulate quick and efficient responses and to make the checklist fun to answer for the children.

Each question will have three possible answers, each of which will be written in Spanish. For each question, three colorful cards with three possible answers will be placed in front of them. The children will chose the card with the answer on it that they chose and the will put it in a bag. The answers will be compared at the beginning and the end of the program.

I wash my hands before eating and after going to the bathroom.	Never	Sometimes	Always
How many kinds of fruits do you eat a day?	None	One	Two or more
How many kinds of vegetables do you eat a day?	None	One	Two or more
How much TV do you watch a day?	Less than an hour	1-2 hours	More than 2 hours
How many times a week do you exercise or play a sport?	None	1-2	3 or more
I drink milk everyday	Never	Sometimes	Always
How many glasses of water do you drink a day?	0-2	3-5	6 or more
I play outside or go for walks	Never	Sometimes	Always
I eat breakfast	Never	Sometimes	Always
How many times a day do you drink soda?	Never	1-2	2-4

### Food consumption and physical activity checklist translated to Spanish

Me lavo las manos antes de comer y después de ir al baño.	Nunca	A veces	Siempre
¿Cuántos tipos de frutas comes diariamente?	0	Uno	Dos o más
¿Cuántos tipos de verduras comes diariamente?	0	Uno	Dos o más
¿Por cuántas horas al día ves la televisión?	Menos que una hora	1-2 horas	más que dos horas
¿Cuántas veces por semana haces ejercicio o practicas un deporte?	0	1-2	3 o más
¿Qué tan a menudo tomas leche?	Nunca	A veces	Siempre
¿Cuántos vasos de agua tomas diariamente?	0-2	3-5	6 o más
¿Qué tan a menudo sales por las tardes a caminar o jugar?	Nunca	A veces	Siempre
¿Qué tan a menudo desayunas?	Nunca	A veces	Siempre
¿Cuántos refrescos tomas al día?	Ninguno	1-2	2-4